REMARKS/ARGUMENTS

Pending Claims

Claims 1-20 are pending in this application. Claims 1 and 9 have been canceled without prejudice or disclaimer. Claims 2, 10 and 16 have been amended. No new matter has been added.

Specification

The Abstract of the Disclosure and the specification have been amended in order to overcome the objections.

Claim Rejections under 35 U.S.C. §§ 102 and 103

Claims 1-3, 9-11 and 16-18 have been rejected under 35 U.S.C. §102(b) as being anticipated by Hagen et al., U.S. Publication No. 2002/0154298 A1. Claims 4-8, 12-15 and 19-20 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Hagen et al., in view of Brunfeld et al., U.S. Patent No. 6,294,793 and Dotan, U.S. Patent No. 5,355,213. Claims 7-8 an 15 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Hagen et al., Brunfeld et al. and Dotan as applied to claims 1-6 and 9-14 and further in view of Yoshiyama et al., U.S. Patent No. 6,078,385. Applicants request reconsideration of the rejections for the following reasons.

According to the present invention, a region to be inspected of a peripheral surface of a disk, which is translucent or transparent, is irradiated with a light beam propagating within the disk and light from the inspected region, which may be scattered by a defect, is received by a (first) light receiving system provided externally of the disk and in the vicinity of the inspected region. As a result, it is possible to precisely detect a crack defect or break defect in the inner and outer peripheral edge portions of the disk without detecting aliens attached to the surfaces of the disk. See page 5, line 23 to page 6, line 4 of the specification, for example.

Hagen et al (Hagen) does not disclose a light receiving system for receiving scattered light. Rather, Hagen discloses a CCD camera or sensor for receiving brightness image of a small spot on cylindrical outer edge surface 14. The CCD camera 22 of Hagen is closely juxtaposed to the edge surface 14 of the disk 12. The optical axis of CCD camera 22 is set at a position according to the edge surface 14 to receive an image of the edge surface 14 as shown Fig. 1. See paragraphs [0033] to [0037] and Fig. 1 of Hagen. On the other hand, the optical axis of the light receiving system of this present invention is not set at a position to receive an image of the edge surface, but rather receives the scattered light from the inspected region.

Further, Hagen does not disclose an illumination system for illuminating a light beam to an inspected region of the edge portion through an inside portion of the disk. In Hagen, the illumination system illuminates a light beam to the edge surface 14 and no inspected region is disclosed that is comparable to that of the present invention. That is, the light internal to the disk of Hagen reflects off other interior portions of edge surface 14 until the light strikes an edge surface 14 of the disk 12 and passes harmlessly into the surrounding space. See

paragraphs [0032] and [0033] and FIG. 1 of Hagen.. Accordingly, the 35 U.S.C. § 102 rejection should be withdrawn.

Brunfeld et al (Brunfeld) is relied upon for disclosing the second light receiving system. However, Brunfeld does not disclose a light receiving system for receiving scattered light. Brunfeld discloses CCD cameras for receiving images, not scattered light, of beveled edges 108 and 110 and a flat edge 10 9 and beveled edges 112 and 114 and a flat edge 113 of the disk 74. That is, Brunfeld discloses that Projection Optics 106 illuminates a light beam to beveled edges 112 and 114 and a flat edge 113 of the inner edge of the disk 74 through an inside portion of the disk 74. See Column 8, lines 33 to 65, Fig. 1 and Fig. 6 of Brunfeld. Accordingly, Brunfeld does not disclose a scattered light receiving system and an illumination system for illuminating the outer edge of the disk through an inside portion of the disk. Therefore, the combination of Hagen and Brunfeld does not render the invention unpatentable under 35 U.S.C. § 103(a).

Neither Dotan nor Yoshiyama discloses the claimed combination of an illumination system for illuminating a light beam to an inspected region of an edge portion of the disk through an inside portion of the disk and a first light receiving system provided externally of the disk for receiving scattered light from the inspected region. Accordingly, the pending claims are patentable over the combination of Hagen, Brunfeld, Dotan and Yoshiyama, and therefore the rejections under 35 U.S.C. § 103 should be withdrawn.

Conclusion

In view of the foregoing, Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Respectfully submitted,

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